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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,275	09/10/2003	Darren Hickey	079173-0124	4032

22428 7590 03/13/2006

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WASHINGTON, DC 20007

EXAMINER

YUAN, DAH WEI D

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 03/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/658,275

Applicant(s)

HICKEY ET AL.

Examiner

Dah-Wei D. Yuan

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) 1-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 36-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11062003.09102003</u> . | 6) <input type="checkbox"/> Other: _____ |

SORFC SYSTEM WITH NON-NOBLE METAL ELECTRODE COMPOSITIONS

Examiner: Yuan

S.N. 10/658,275

Art Unit: 1745

March 8, 2006

Election/Restrictions

1. Applicant's election without traverse of Group II, claims 36-48, in Paper filed February 15, 2006 is acknowledged. Therefore, claims 1-35 are withdrawn from consideration.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 36-48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. The term "sufficient" in claims 36,48 is a relative term which render the claims indefinite. The term "sufficient" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 36,39-43,45 are rejected under 35 U.S.C. 102(e) as being anticipated by McElroy et al. (US 2004/0081859 A1).

With respect to claims 36,41-43, McElroy et al. teach a method of operating a solid oxide regenerative fuel cell comprising operating the solid oxide regenerative fuel cell in a fuel cell mode, operating the solid oxide regenerative fuel cell in an electrolysis mode and providing carbon dioxide (a reducing atmosphere) and water vapor to the negative electrode. The negative electrode is made of strontium doped lanthanum, which contains no noble metal. See Paragraphs 16-20, 25,26,30,83.

With respect to claims 39,40, McElroy et al. teach the use of carbon oxides as the reducing atmosphere, wherein the carbon oxides comprises carbon monoxide. See Paragraph 30.

With respect to claim 45, McElroy et al. teach the positive electrode is LSM and the negative electrode is a nickel YSZ mixture. See Paragraph 26.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 36-43,46,47 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over McElroy et al. (US 2004/0191595 A1).

With respect to claims 36,41-43, McElroy et al. teach a method of operating a solid oxide regenerative fuel cell comprising operating the solid oxide regenerative fuel cell in a fuel cell mode, operating the solid oxide regenerative fuel cell in an electrolysis mode and providing carbon dioxide (a reducing atmosphere) and water vapor to the negative electrode. A direct current power source is connected to the anode electrode and the cathode electrode. The negative electrode is made of a porous electrode comprising platinum or platinum family metals. See Abstract, Paragraphs 22-26,31,32,37,44,50. However, McElroy et al. do not specifically teach the concentration of the noble metal in the electrode. It is the position of the examiner that such characteristics are inherent, given that both McElroy et al. and the present application utilize the same method to operate the solid oxide regenerative fuel cell. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature *is necessarily present in that which is described in the reference*. In re Robertson, 49 USPQ2d 1949 (1999). Applicant is advised to submit other information with respect to the McElroy's negative electrode in the fuel cell, if it is shown to be patentably distinct from the instant invention.

Alternatively, it would have been obvious to one of ordinary skill in the art to lower the contents of the platinum metal in the negative electrode in order to lower the manufacturing and operation costs of the solid oxide regenerative fuel cell.

With respect to claim 37, McElroy et al. teach the reducing atmosphere contains hydrogen and carbon oxides. See Paragraph 50.

With respect to claim 38, McElroy et al. do not specifically disclose the water to hydrogen ratio at the negative electrode during the electrolysis mode. However, it is the position of the examiner that such characteristics are inherent, given that both McElroy et al. and the present application utilize the same method to operate the solid oxide regenerative fuel cell. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature *is necessarily present in that which is described in the reference*. In re Robertson, 49 USPQ2d 1949 (1999). Applicant is advised to submit other information with respect to the McElroy's method of operating the solid oxide regenerative fuel cell, if it is shown to be patentably distinct from the instant invention.

With respect to claims 39,40, McElroy et al. teach the use of carbon oxides as the reducing atmosphere, wherein the carbon oxides comprises carbon monoxide. See Paragraphs 26,50.

With respect to claim 46, McElroy et al. teach the use of exhaust gas which contains hydrogen and carbon oxides. See Paragraph 50.

With respect to claim 47, the solid oxide regenerative fuel cell is used to provide power to building, an appliance, a factory or a ground, air or water vehicle. Thus, the fuel cell can be recycled between the fuel cell mode and the electrolysis mode more than 30 times. See Paragraph 30.

Allowable Subject Matter

8. Claims 44,48 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. Claim 44 would be allowable because the prior art does not disclose or suggest the negative electrode comprises at least one of Ni, Cu, Fe or a combination thereof with an ionic conducting phase. Claim 48 would be allowable because the prior art does not disclose or suggest the method further comprising generating hydrogen at the negative electrode in the electrolysis mode by electrolysis of water vapor; providing remaining water vapor and the generated hydrogen to a water-hydrogen separator to separate the hydrogen from water; providing the separated hydrogen to a compressor; providing a first portion of the compressed hydrogen to a hydrogen storage vessel; and providing a second portion of the compressed hydrogen to the negative electrode to maintain the sufficient reducing atmosphere at the negative electrode.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (571) 272-1295. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dah-Wei D. Yuan
March 9, 2006



DAH-WEI YUAN
PRIMARY EXAMINER